

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
HAYSTACK OBSERVATORY  
WESTFORD, MASSACHUSETTS 01886**  
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*Telephone: 617-715-5533*

To: EDGES group

From: Alan E.E. Rogers

Subject: Broadband bursts in EDGES WA data at night

A broadband burst which is thought to come from a STEVE (Strong Thermal Emission Velocity Enhancement) event in the sky is studied in memo 509 but since this event occurs in the daytime when the Sun is well above the horizon it could have come from the sun. Looking through the EDGES data I find many cases of what might be a STEVE burst that occurs at night when the Sun is well below the horizon and these events are listed in the Table below:

year_day	UT time of burst	LT	strength deg K	frequency range MHz	date
2026_104	13 - 15	21 - 23	1000	40 - 80	April 14
2024_365	10 - 11	18 - 19	100	50 - 65	Dec 30
2024_358	10 - 11	18 - 19	50	50 - 65	Dec 23
2024_347	14 - 16	22 - 24	1000	40 - 140	Dec 12
2024_324	15 - 17	23 - 01	4000	40 - 140	Nov 19
2024_284	13 - 15	21 - 23	2000	40 - 140	Oct 10
2025_071	15 - 16	23 - 24	100	40 - 140	Mar 12
2025_101	10 - 14	18 - 22	1000	40 - 140	Apr 11

Table 1. List of EDGES bursts at night

Figure 1 shows the water-fall plots of the 8 cases in table 1 with 2026\_104 at the top left and 2025\_101 on the bottom right. These plots are in a compressed form so that the pdf for all 8 cases is reduced from 500 to 67 Megabytes.

A reference to the October 10 2024 event seen in the Northern hemisphere at:

Kataoka, R., Nakano, S., Uchino, S. *et al.* Extended red aurora associated with super substorm igniting the October 10, 2024 magnetic storm as revealed by citizen science. *Earth Planets Space* **77**, 64 (2025). <https://doi.org/10.1186/s40623-025-02178-w>

and there is a reference to:

A spectacular STEVE (Strong Thermal Emission Velocity Enhancement) event, a rare atmospheric optical phenomenon, was widely observed alongside the Aurora Australis in the Geelong area on the night of October 11, 2024 on Facebook.

In summary in all 8 cases the spectra in UT range listed in table 1 have broadband emission during the night when the sun is well below the horizon so the radio wave emission in the frequency range listed in table 1 can not be coming directly from the sun.

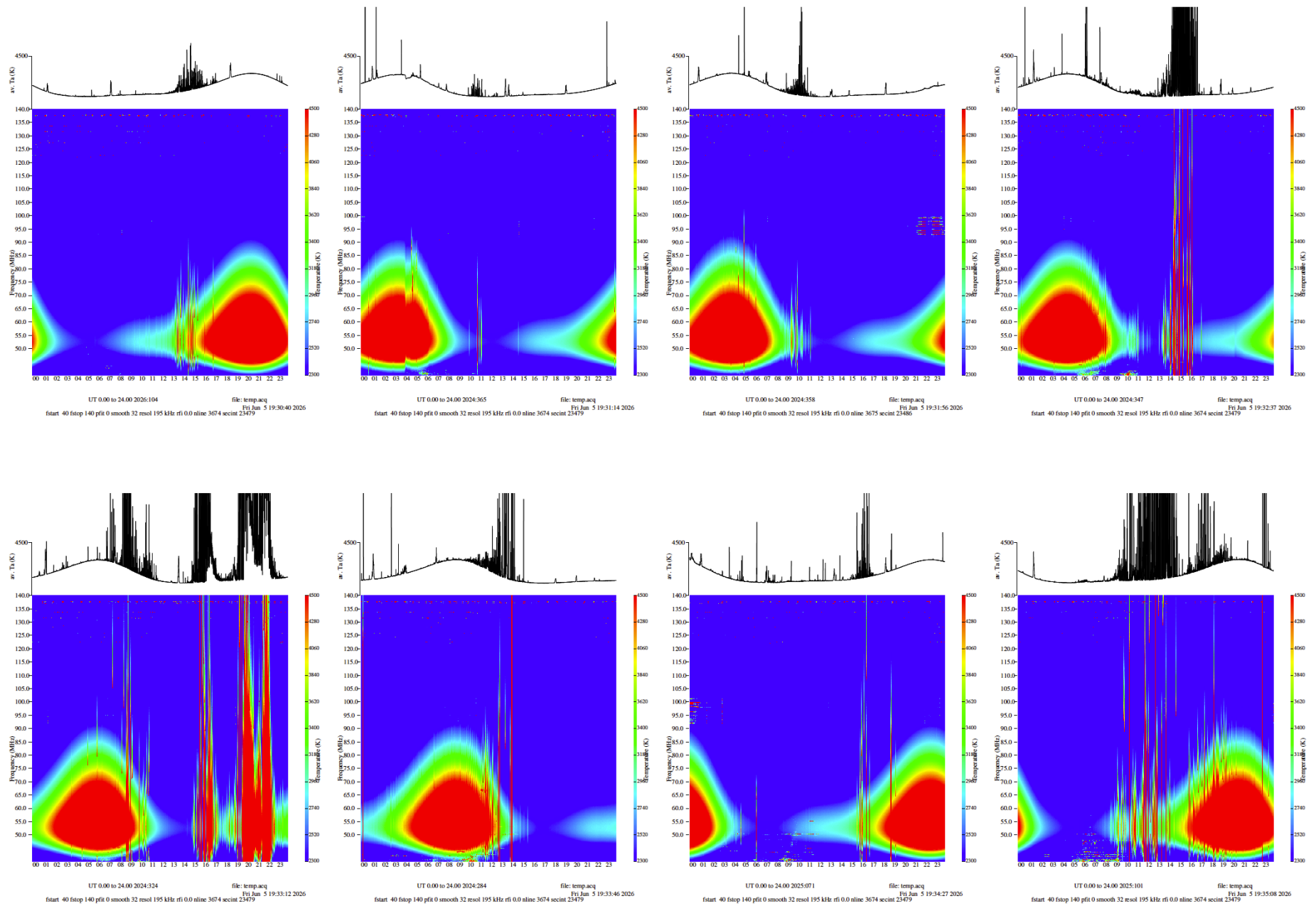


Figure 1 Water-fall plots of calibrated sky noise spectra listed in Table 1.